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Rural Applications of Telemedicine Final Report

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RURAL APPLICATIONS OF TELEMEDICINE
FINAL REPORT*

EXECUTIVE SUMMARY**

The Office of Rural Health Policy (ORHP), Health Resources and Services Administration (HRSA), Department of Health and Human Services (HHS), and other state and federal governmental agencies have devoted considerable financial support to rural telemedicine demonstration projects. The projects are using modern telecommunication technology to improve access to health care for rural populations. ORHP has been involved in telemedicine since 1988 and currently funds eleven telemedicine projects through its Rural Telemedicine Grant program, a large demonstration project in West Virginia, and six telehealth projects through its Rural Health Outreach grant program. One of the missing pieces in assessing the value of telemedicine was a comprehensive study of the use of this technology throughout rural America. This project, which was the first nationwide survey of rural telemedicine (not limited to interactive video), examined the status of rural telemedicine. It also developed evaluation tools and methods for agencies and individual programs to use in assessing the contribution of telemedicine to rural health care delivery. As such, this study represents an early snapshot of a technology that is expanding rapidly both in technical capability and potential applications for health care.

- Rural Telemedicine is in the earliest stages of development, but is expanding quickly. More than 40% of the telemedicine programs surveyed had been providing teleconsults for one year or less. Networks had an average of 9.3 facilities participating and many planned to expand. By the end of 1996, networks expected to have an average of 13 participating sites.

- By the end of 1996, nearly 30% of rural hospitals will be using some sort of telemedicine technology to deliver patient care. Of these, 68% will offer only teleradiology.

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** The full Final Report appears on the Internet and can be accessed at: <http://www.hrsa.dhhs.gov/news.htm>.

- Age of the telemedicine system and receipt of federal funding were all positively and significantly associated with total utilization of the telemedicine system (clinical and nonclinical sessions combined). The strongest association was between utilization and age of the system; as facilities gain experience with telemedicine, utilization increases.

- Some clinical applications appear to gain earlier acceptance in telemedicine than others. Radiology and cardiology were the most common clinical applications reported, followed by orthopedics, dermatology, and psychiatry. The most common nonclinical applications were education, administrative meetings, and demonstrations of the system to health care personnel.

The Exploratory Evaluation of Rural Applications of Telemedicine was conceptualized by ORHP and conducted by Abt Associates, Inc., assisted by the University of Colorado. The objectives of the study included:

> 1) Determining the current status of telemedicine in rural health care with respect to the number and types of systems in operation, levels of technology employed, types of specialty services provided, utilization of services, costs, and patient and provider acceptance.
>
> 2) Exploring the effects of telemedicine on access to care, practitioner isolation, and the development of health care networks.
>
> 3) Exploring the organizational factors (at facility, network, community, and State levels) that aid or impede the successful development and implementation of telemedicine systems.
>
> 4) Developing, testing, and refining data collection instruments that may be used in subsequent evaluation efforts.

The study design specified by ORHP included the following activities:

- Nationwide surveys of all rural hospitals to identify those actively using telemedicine (summer 1995).

- Detailed follow-up surveys of participants and their affiliates to describe uses of telemedicine; equipment and transmission media in use; funding sources and costs of telemedicine installations; volume of care being provided and volume of nonclinical uses of the systems; and use of telemedicine to fill gaps in specialty access in remote rural areas (December of 1995 to January of 1996).

- Intensive site visits at four rural telemedicine programs to investigate issues not readily studied via a survey and to provide the context for the survey data.

The screening survey was mailed to all 2,472 non-federal U.S. hospitals that are outside metropolitan areas, as defined by the U.S. Census. Those that did not respond were interviewed via telephone. The final response rate was 95%. All those who reported that they had some form of telemedicine capability, and all the telemedicine affiliates they named, became the sample for the follow-up survey. Affiliates included metropolitan medical centers, rural clinics, mental health centers, and nursing homes. Each target respondent received two instruments in the mail: one for programs that do only teleradiology, and a longer questionnaire for those who have other telemedicine applications available beyond radiology. Respondents were asked to select, complete, and return the appropriate questionnaire. Again, nonrespondents were interviewed by telephone. The telephone follow up portion of the sample were interviewed using an abbreviated instrument; they were not asked to obtain information from administrative or financial records because this is difficult to do in the course of a telephone interview. From the group of 558 active rural telemedicine sites and their affiliates, 499 (89%) completed the follow-up survey.

The very high overall response rates were accompanied by significant item nonresponse on some survey questions. The most problematic were questions about the precise equipment in use (e.g., resolution of monitors), about billing practices, and about reimbursement for telemedicine sessions. Questions about the number of sessions and the percent that was for clinical versus nonclinical purposes also appeared to be difficult for many sites to answer, largely because they did little session-level data collection beyond simple counts. The final chapter of this report recommends "model" data collection tools, an encounter session form which could be aggregated annually (or more often), and a facility level survey which could be conducted annually.

The following are additional key findings from the survey efforts and the case study investigations:

- Telemedicine networks were complex, with an average of four spoke sites, two hubs, and four facilities that both provided and received consults.
- Many rural hospitals were taking full advantage of the available technology. The equipment base was large, sophisticated, and growing quickly. Most rural telemedicine sites (excluding those doing only teleradiology) offered full-motion interactive video for live interviews, meetings, and educational sessions.
- Despite the growth and expansion of this technology, the cost of telemedicine remained high. The average equipment purchase, excluding switches and new lines, ranged from $134,378 for spoke sites to $287,503 for hub sites. Reported annual transmission costs were also high, ranging from an average of $18,573 for spokes to $80,068 for hubs.
- Utilization was low in the first years of most rural telemedicine programs. The average number of total sessions per month (clinical and nonclinical combined) was 24, with a median of 11. The median or typical telemedicine facility was conducting approximately one clinical session per week and 1-2 nonclinical sessions per week in early 1996.
- High costs, combined with low utilization in the early years of operation, yielded high unit costs. A teleconsult cost the median or typical hub site $1,181, while the median spoke site spent $476 per consult, exclusive of any reimbursement to clinicians.
- Federal and State grants were common sources of direct funding for telemedicine programs, and the majority of sites also received hospital financial support. Third-party reimbursement for telemedicine was elusive: fewer than 25% of hub facilities had successfully negotiated payment with insurance carriers and many had not yet undertaken such negotiations.
- Lack of reimbursement, lack of clinical standards, scheduling, and time commitment remain challenges to further development and use of rural telemedicine.

The findings of this study confirmed many issues previously identified in grant projects relating to organizational challenges and barriers to expansion. At the same time, the survey pointed out some new developments in the field. First, most of the surveyed programs were quite new. This may in part explain the relatively low utilization figures reported on the survey, and the high resulting unit costs. It is important to note that those systems able to survive and expand experience higher utilization after the second year of operations. It is also clear that more rural hospitals were turning to telemedicine as a tool for improving health care delivery, despite the fact that there is limited reimbursement for these services from third-party payers.